

CLAIMS

1. An immunogenic detoxified protein comprising the amino acid sequence of subunit A of an *E.coli* heat labile toxin 5 (LT-A), or a fragment thereof, wherein at least amino acid Ala-72 in said sequence or fragment is mutated.

2. An immunogenic detoxified protein according to claim 1, wherein Ala-72 is mutated by substitution.

10 3. An immunogenic detoxified protein according to claim 2, wherein Ala-72 is substituted with an arginine residue.

4. An immunogenic composition comprising an immunogenic 15 detoxified protein according to any one of claims 1 to 3 and a pharmaceutically acceptable carrier.

5. An immunogenic composition according to claim 4 further comprising an adjuvant.

20 6. An immunogenic composition according to claim 4 or claim 5 further comprising a second immunogenic antigen.

7. The use of a detoxified protein according to any one of 25 claims 1 to 3 as an adjuvant.

8. A method of vaccinating a mammal against an enterotoxigenic strain of *E.coli* comprising administering an effective amount of an immunogenic detoxified protein 30 according to any one of claims 1 to 3.

9. A DNA sequence encoding an immunogenic detoxified protein according to any one of claims 1 to 3.

35 10. A vector comprising a DNA sequence according to claim 9.

11. A host cell transformed with the vector of claim 10.

Sub  
A

*Cont  
Step  
a2*

12. A process for the production of an immunogenic detoxified protein according to any one of claims 1 to 3 comprising culturing a host cell according to claim 11.

5 13. A process for the production of a DNA according to claim 9 comprising the steps of subjecting a DNA encoding a wild-type LT-A or a fragment thereof to site-directed mutagenesis.

10 14. A process for the formulation of an immunogenic composition according to claim 4 to 6 comprising bringing an immunogenic detoxified protein according to any one of claims 1 to 3 into association with a pharmaceutically acceptable carrier.

15 15. A method for the prevention or treatment of disease in a subject, comprising administering to said subject an immunologically effective dose of an immunogenic composition according to any one of claims 4 to 6.

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*Abstract*